Exhibit B

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1

2   UNITED STATES DISTRICT COURT
                    NORTHERN DISTRICT OF OHIO
3   C.A. NO. 4:08-CV-00160
4   - - - - - - - - - - - - - - - - - -x
     OHIO PUBLIC EMPLOYEES   :
5   RETIREMENT SYSTEM on Behalf of   :
     Itself and All Others Similarly   :
6   Situated,   :
                                           :
7   Plaintiff,   :
                                           :
8   v.   :
                                           :
9   FEDERAL HOME LOAN MORTGAGE   :
     CORPORATION, a/k/a Freddie Mac,   :
10   RICHARD F. SYRON, PATRICIA L.   :
     COOK, ANTHONY S. PISZEL, and   :
11   EUGENE M. MCQUADE,   :
                                           :
12   Defendants.
     - - - - - - - - - - - - - - - - - -x
13

14

        DEPOSITION OF STEVEN P. FEINSTEIN, PHD, CFA
15   (Vol. 2)
16   Boston, Massachusetts
                 Thursday, August 17, 2017
17

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24   REPORTED BY: Deanna J. Dean, RDR, CRR
25   JOB NO. 129069

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3
4   Thursday, August 17, 2017
5   9:58 a.m.
6
7
8   Deposition of STEVEN P. FEINSTEIN,
9   PHD, CFA, held at the offices of Morgan,
10 Lewis & Bockius LLP, One Federal Street,
11 Boston, Massachusetts 02110, before Deanna
12 J. Dean, a Registered Professional
13 Reporter, Registered Diplomate Reporter,
14 Certified Realtime Reporter, and Notary
15 Public of the State of Massachusetts.
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1
2   A P P E A R A N C E S
3
4   MARKOVITS, STOCK & DEMARCO
5   Attorneys for Plaintiff
6   3825 Edwards Road
7   Cincinnati, 45209
8
9   BY: WILLIAM MARKOVITS, ESQ.
10
11   (appearing via video conference)
12
13 MORGAN, LEWIS & BOCKIUS
14 Attorneys for Defendant Federal Home
15 Loan Mortgage Corporation, a/k/a Freddie Mac
16   One Federal Street
17   Boston, MA 02110
18
19 BY: JASON FRANK, ESQ.
20 BY: LIZA HAYS, ESQ.
21 BY: EMILY RENSHAW, ESQ.
22
23
24
25

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1
2   A P P E A R A N C E S (cont'd.)
3
4   SIDLEY AUSTIN
5   Attorneys for Defendant Richard Syron
6   1501 K Street Northwest
7   Washington, DC 20005
8
9   BY: FRANK VOLPE, ESQ.
10
11   (appearing via speakerphone)
12
13 ZUCKERMAN SPAEDER
14 Attorneys for Defendant Patricia Cook
15   1800 M Street Northwest
16   Washington, DC 20036-5807
17
18 BY: ADAM FOTIADES, ESQ.
19
20   (appearing via video conference)
21
22
23
24
25

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1
2   A P P E A R A N C E S (cont'd.)
3
4   MURPHY & MCGONIGLE
5   Attorneys for Defendant Anthony Piszel
6   1185 Avenue of the Americas
7   New York, NY 10036
8
9   BY: James Goldfarb, Esq.
10   (appearing via video conference)
11
12
13 DECHERT
14   Attorneys for Defendant Eugene McQuade
15   Cira Centre
16   2929 Arch Street
17   Philadelphia, PA 19104
18
19 BY: CATHERINE WIGGLESWORTH, ESQ.
20
21   (appearing via video conference)
22
23 ALSO PRESENT:
24   William Slater, Legal Video Specialist
25

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1
2   STIPULATIONS
3
4   IT IS HEREBY STIPULATED AND AGREED
5   by and between counsel for the respective
6   parties that the sealing and filing of the
7   deposition in court are waived; that the
8   witness shall read and sign the deposition
9   transcript under the pains and penalties of
10   perjury, within 30 days of receipt thereof.
11   IT IS FURTHER STIPULATED that all
12   objections, except as to the form of the
13   question, and motions to strike are reserved to
14   the time of trial.
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1   Steven P. Feinstein, PhD, CFA
2   P R O C E E D I N G S
3   THE VIDEOGRAPHER: Here begins media
4   labeled No. 1 in Day 2 of the video
5   deposition of Steven P. Feinstein, PhD, in
6   the matter of Ohio Public Employees
7   Retirement System, et al., versus Federal
8   Home Loan Mortgage, et al., in the United
9   States District Court in the Northern
10   District of Ohio, Eastern Division, No.
11   4:08-CV-00160.
12   This deposition is being held at the
13   offices of Morgan Lewis, One Federal
14   Street, Boston, Massachusetts, on
15   August 17, 2017. The time is approximately
16   9:58 a.m.
17   My name is Bill Slater. I am the
18   legal video specialist from TSG Reporting,
19   Incorporated, headquartered at 747 Third
20   Avenue, New York, New York.
21   The court reporter is Deanna Dean in
22   association with TSG Reporting.
23   Will counsel please introduce
24   themselves for the record.
25   MR. FRANK: Good morning, everyone.

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1   Steven P. Feinstein, PhD, CFA
2   Jason Frank from Morgan, Lewis & Bockius on
3   behalf of Freddie Mac.
4   MS. HAYS: Good morning. Liza Hays,
5   also from Morgan Lewis, on behalf of
6   Freddie Mac.
7   MS. RENSHAW: Emily Renshaw, also
8   from Morgan Lewis, on behalf of Freddie
9   Mac.
10   MR. MARKOVITS: Bill Markovits,
11   Markovits, Stock & DeMarco, on behalf of
12   OPERS.
13   MR. VOLPE: Frank Volpe, Sidley
14   Austin, on behalf of Richard Syron,
15   participating by telephone.
16   MR. GOLDFARB: James Goldfarb,
17   Murphy & McGonigle, for defendant Anthony
18   Piszel, participating by video.
19   MR. FOTIADES: Adam Fotiades from
20   Zuckerman Spaeder, on behalf of Patty Cook,
21   appearing by video.
22   MS. WIGGLESWORTH: Catherine
23   Wigglesworth from Dechert LLP on behalf of
24   Eugene McQuade, also participating by
25   video.

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1   Steven P. Feinstein, PhD, CFA
2   THE VIDEOGRAPHER: Will the court
3   reporter please swear in the witness and we
4   can proceed.
5   STEVEN P. FEINSTEIN, PHD, CFA
6   a witness called for examination by counsel for
7   the Defendant, having been satisfactorily
8   identified and being first duly sworn by the
9   Notary Public, was examined and testified as
10   follows:
11   EXAMINATION
12   BY MR. FRANK:
13   Q.   Good morning, Dr. Feinstein.
14   A.   Good morning.
15   Q.   You'll recall you were deposed in
16   these offices last Thursday, August 10, 2017.
17   Correct?
18   A.   That's right.
19   MR. FRANK: Let me mark as the first
20   exhibit an email that I received from
21   Mr. Markovits on August 11, 2017.
22   If we could mark that as Exhibit No.
23   110, please.
24   (Exhibit 110 is marked for
25   identification.)

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1   Steven P. Feinstein, PhD, CFA
2   MR. MARKOVITS: Are you going to
3   send me that by PDF, or which email is it?
4   I sent you two in August.
5   MR. FRANK: Yes. This is an email
6   with a time stamp of 5:03 and we will send
7   it to you. I guess Ms. Renshaw already
8   sent it to you, Bill, so it will be
9   arriving momentarily.
10   But this is the email sent -- do you
11   have it?
12   MR. MARKOVITS: Yeah. Wonders of
13   technology, it's here.
14   MR. FRANK: Very good.
15   BY MR. FRANK:
16   Q. Dr. Feinstein, you'll see that
17   before you is Exhibit 110. It is an email from
18   Mr. Markovits to Ms. Renshaw and myself on
19   Friday, August 11, 2017, at 5:03 p.m. It
20   states in the text, "Attached are the codes
21   used to run the cross-checks discussed
22   yesterday. They don't keep the results. Just
23   run them and report to Dr. Feinstein if there's
24   an issue."
25   Do you see that?

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1   Steven P. Feinstein, PhD, CFA
2   A. I do.
3   Q. Is it true that your firm doesn't
4   keep the results of the diagnostic tests it
5   runs?
6   A. Right. They're not printed out,
7   even, generally.
8   Q. Okay. And they report those results
9   to you only if there's an issue. Is that
10   correct?
11   A. Well, I -- yes -- no. I ask if
12   there's an issue, and they told me there were
13   none in this case. So it's not like they would
14   just bring it to me if there's an issue. I in
15   this case specifically remember asking is
16   there -- are there any issues that I should
17   know about.
18   Q. And you had asked about that in
19   preparation for your deposition. Is that
20   correct?
21   A. I believe I asked sooner, but I'm
22   not sure, for sure. No, I -- they routinely
23   would bring to my attention any issues if they
24   identify any issues, and I do recall at one
25   point asking if there are any issues in this

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1   Steven P. Feinstein, PhD, CFA
2   case. I don't recall whether that was before
3   or exactly when that was.
4   Q. Okay. And in his next sentence in
5   the email, Mr. Markovits says, "I've asked" --
6   I believe the word is supposed to be "them."
7   "I've asked them to run them again
8   and get them to me."
9   Do you see that?
10   A. I do.
11   Q. And did you ask your team to run
12   certain diagnostic tests on Friday, August 11,
13   2017?
14   A. Yes.
15   Q. Okay. What diagnostic tests did you
16   ask them to run?
17   A. The binomial test, the bootstrap
18   test, and the Fisher exact test.
19   Q. And who ran those tests?
20   A. Miguel Villanueva.
21   MR. FRANK: Let's mark this document
22   as the next exhibit.
23   (Exhibit 111 marked for
24   identification.)
25   BY MR. FRANK:

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1   Steven P. Feinstein, PhD, CFA
2   Q. Dr. Feinstein, I've placed before
3   you a document that's been marked as Exhibit
4   111 that is labeled "Freddie Mac Collective
5   Test Robustness Checks."
6   Do you see that?
7   A. I do.
8   MR. FRANK: And for those
9   participating telephonically or by video,
10   this is the document that Mr. Markovits
11   produced to us on Friday.
12   Bill, do you have that document?
13   MR. MARKOVITS: Yes, I do.
14   MR. FRANK: Great.
15   Q. Now, is Exhibit -- no. Strike that.
16   Exhibit 111 shows the results of the
17   diagnostic tests that you had your team run on
18   Friday, August 11, 2017. Correct?
19   A. Mostly correct. There -- there's
20   one typographical error.
21   Q. Okay. And that typographical error
22   that you are -- well, strike that.
23   What typographical error are you
24   referring to?
25   A. On the rightmost column where the

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1   Steven P. Feinstein, PhD, CFA
2 numbers are, there are four numbers presented
3 vertically. The third one down is 0.17. My
4 understanding is that should be 1.17, the same
5 as the number directly above it.
6   Q.   Now, do you review Exhibit 111
7 before -- well, strike that.
8   Did your team create Exhibit 111?
9   A.   Yes.
10   Q.   And did your team provide it to
11 Mr. Markovits?
12   A.   Yes.
13   Q.   Did you review Exhibit 111 before it
14 was provided to Mr. Markovits?
15   A.   No.
16   Q.   Okay. And do you know whether --
17   MR. MARKOVITS: Jason, if you could
18 hold one second. This is Bill.
19   I don't know if you received it, but
20 I sent to you a corrected -- and Emily -- a
21 corrected version of Exhibit 111.
22   MR. FRANK: We did receive it, and
23 I'll be entering it as an exhibit
24 momentarily.
25   MR. MARKOVITS: All right. Thank

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1   Steven P. Feinstein, PhD, CFA
2 you.
3   MR. FRANK: Bill, I assume you're
4 referring to the email you sent us at about
5 9:32 this morning?
6   MR. MARKOVITS: Yes.
7   MR. FRANK: Okay. Thank you.
8 BY MR. FRANK:
9   Q.   Now, do you know whether or not you
10 reviewed Exhibit 111 before Mr. Markovits
11 provided it to me on Friday, August 11, 2017?
12   A.   No. I mean, I do know. I reviewed
13 it yesterday.
14   Q.   Okay. You reviewed Exhibit 111 for
15 the first time yesterday?
16   A.   That's right.
17   Q.   Okay. Now, in addition to having
18 results for Fisher's exact test, bootstrap
19 test, and a binomial test, Exhibit 111 also
20 reports z-test results. Correct?
21   A.   That's right.
22   Q.   Okay. And were those results --
23 strike that.
24   Were the z-tests that are referenced
25 there run prior to August 11, 2017?

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1   Steven P. Feinstein, PhD, CFA
2   A.   Yes.
3   Q.   Okay.
4   A.   That's my understanding. They
5 repeated the same test that was run when I was
6 preparing my report.
7   Q.   So these z-test results that appear
8 on Exhibit 111 represent an effort to rerun the
9 z-test that you referenced in your expert
10 report in this case?
11   A.   That's right.
12   Q.   Now, when you reviewed Exhibit
13 111 -- strike that. I apologize.
14   When did you say you first reviewed
15 Exhibit 111?
16   A.   Yesterday, late afternoon.
17   Q.   Okay. When you reviewed Exhibit 111
18 yesterday, did you identify any errors in the
19 document?
20   A.   I did.
21   Q.   Okay. What errors did you identify?
22   A.   The one I spoke about moments ago.
23   Q.   Okay. Did you -- the one you spoke
24 about being that the 0.17 percent next to
25 bootstrap test results and in the second column

Page 414

1   Steven P. Feinstein, PhD, CFA
2 should be 1.17 percent?
3   A.   That's right.
4   Q.   Did you identify any other errors in
5 the document?
6   A.   No.
7   Q.   Okay. So to the best of your
8 knowledge, Exhibit 111 is correct in all
9 respects, with the exception of that one error.
10 Is that correct?
11   A.   Well, to the best of my knowledge,
12 I -- I didn't compare the -- I didn't compare
13 the output to the code, and I didn't -- I
14 relied on my team for that. And I didn't
15 compare the z-test results to what's in the
16 report, but I could do that. I haven't done it
17 yet.
18   Q.   Well --
19   A.   But, yes, to the best of my
20 knowledge, it's correct.
21   Q.   Okay. Let's mark as the next
22 exhibit the corrected version.
23   MR. FRANK: If we could please mark
24 this as Exhibit 112.
25   (Exhibit 112 marked for

Page 415

1   Steven P. Feinstein, PhD, CFA
2   identification.)
3   BY MR. FRANK:
4   Q.   Okay. I apologize.
5   So you have before you a document
6   that's been marked as Exhibit 112. Correct?
7   A.   Yes.
8   Q.   Okay. And Exhibit 112 consists of
9   an email from Mr. Markovits to me from this
10   morning at 9:31 a.m., I believe, attaching a
11   document titled "Freddie Mac Collective Test
12   Robustness Checks." Correct?
13   A.   Yes.
14   Q.   And the robustness checks page is
15   identical to Exhibit 111 with the exception of
16   the error you previously identified. Is that
17   correct?
18   A.   That's right.
19   Q.   Okay. And so it's your
20   understanding that the attachment, the second
21   page of Exhibit 112, is the correct version of
22   the Freddie Mac collective test robustness
23   checks. Correct?
24   A.   Yes.
25   Q.   Okay. Now, this -- Exhibit 112 sets

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1   Steven P. Feinstein, PhD, CFA
2   forth, like Exhibit 111, the results of your
3   z-test. Correct?
4   A.   Yes.
5   Q.   Why did your team provide to us the
6   results of the z-test as opposed to merely the
7   results of diagnostic tests that were run on
8   Friday, August 11, 2017?
9   A.   I'm not entirely sure what the --
10   MR. MARKOVITS: Objection.
11   A.   -- instructions were.
12   MR. MARKOVITS: Excuse me one
13   second, Doctor.
14   Objection. Calls for speculation.
15   If you know.
16   A.   I don't know.
17   Q.   Okay. You didn't instruct your team
18   to provide -- to create a document that
19   reflected z-test results. Is that correct?
20   A.   Correct.
21   Q.   Did you instruct your team to create
22   a document like this and provide it to counsel?
23   A.   No.
24   Q.   Okay. So this document that's been
25   identified as Exhibit 112 and the similar but

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1   Steven P. Feinstein, PhD, CFA
2   with one error in it document that's been
3   identified as Exhibit 111, those documents
4   weren't generated per your instruction.
5   Correct?
6   A.   It's not so black and white. My
7   understanding is counsel, plaintiff's counsel
8   asked for this document and I allowed it. I
9   permitted that.
10   Q.   Okay. But --
11   A.   I gave the okay.
12   Q.   But you didn't determine what was
13   going to go in it and what wasn't going to go
14   in it. Correct?
15   A.   No. To some extent, I did. I
16   did -- I understood that there was a request
17   from you, from defense counsel, for the
18   diagnostic test. And so when I understood
19   that's what they were being asked to do, I, of
20   course, allowed that.
21   I don't see any -- I didn't see
22   any -- I didn't specifically allow or disallow
23   the z-test results to be printed here, but I
24   under -- it's reasonable that one would want
25   them there for comparison purposes.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   Now, the z-test results we see in
3   the first column relate to what it states here
4   is WSJ/NYT news event days.
5   Do you see that?
6   A.   Yes.
7   Q.   Okay. And WSJ is short for Wall
8   Street Journal. Right?
9   A.   Yes.
10   Q.   And NYT is short for New York Times.
11   Right?
12   A.   Yes.
13   Q.   Okay. And this is a reference to
14   the z-test that you ran that's discussed in
15   your report that relates to event days that you
16   selected using a Wall Street Journal/New York
17   Times election approach. Correct?
18   A.   Yes.
19   Q.   Okay. And there, it says the
20   p-value associated with those dates is
21   .0004 percent.
22   Do you see that?
23   A.   Yes.
24   Q.   And is it your understanding that
25   that is the correct p-value for the z-test that

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1   Steven P. Feinstein, PhD, CFA
2   was run and discussed in your report?
3   A.   I would have to compare them. So it
4   isn't, as I sit here right now, my
5   understanding.
6   Q.   Okay. So you don't know one way or
7   another whether that's the correct p-value for
8   the z-test that's referenced in your report?
9   A.   I recall seeing the digit 4, but I
10   would have to compare this number to my report
11   to know for sure.
12   Q.   Let me show you your report which
13   was previously marked last week as Exhibit 96.
14   You have Exhibit 96 before you.
15   Correct?
16   A.   Yes.
17   Q.   Now, let me turn your attention to
18   Table 9 of Exhibit 96, which I believe appears
19   at the very end of the document.
20   Do you have Exhibit 9 in front of
21   you?
22   A.   I do.
23   Q.   Okay. So Exhibit 9 of Exhibit 96 is
24   a set of results that you included at the end
25   of your expert report. Correct?

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1   Steven P. Feinstein, PhD, CFA
2   A.   Yes.
3   Q.   It's titled "Freddie Mac Collective
4   Test Result." Correct?
5   A.   Just one moment, please.
6   Q.   Sure.
7   A.   (Reviewing document.)
8   Okay.
9   Q.   You've had a chance to look at
10   whatever portions of Exhibit 96 you wanted to
11   look at?
12   A.   Yes.
13   Q.   Okay. And you observed in Exhibit
14   96 that both in paragraph 143 and in Exhibit 9
15   to your report -- that is, Exhibit 96 -- that
16   the p-value you report is .0005 percent.
17   Correct?
18   A.   That's right.
19   Q.   Okay. And here on this page, it's
20   .0004 percent. Right?
21   A.   Yes.
22   Q.   Do you know why there's a difference
23   between Exhibit 112 and Exhibit 96 on this
24   issue?
25   A.   I don't know for sure. I know that

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1   Steven P. Feinstein, PhD, CFA
2   the important thing is the asterisk that says
3   that it's statistically significant at the
4   95 percent confidence level, and both of those
5   numbers certainly are.
6   Again, without speculating, I -- it
7   could be due to just a rounding issue, whether
8   it was rounded up or down, and when this --
9   when Exhibit 111 and 112 were produced, how the
10   rounding was done, whether they rounded up or
11   down.
12   Q.   As you sit here today, do you know
13   what the correct p-value is for the FDT z-test
14   that you ran?
15   A.   Well, I know that it's -- I do know
16   that it's highly significant at the 95 or
17   99 percent confidence level; that if there's
18   any discrepancy whatsoever, it's out in the
19   ten-thousandths of a percent digit. But I
20   don't know for sure whether it should be 4 or
21   5 -- .0004 percent or .0005 percent.
22   My inclination is to stand by my
23   report, given that the table we're talking
24   about was produced essentially at your request
25   and late on Friday afternoon.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   Well, will you -- you don't recall
3   me requesting that your team or you rerun your
4   z-test, do you?
5   A.   No.
6   Q.   And so as you sit here today, do you
7   know if the .0004 percent or the .0005 percent
8   number is the correct number?
9   A.   Well, I mean, I do know from
10   speaking to Alex Huang, who presented -- who
11   prepared this table, when I asked him about the
12   0.17 versus the 1.17, he said it was a
13   transcription error. He was transcribing off
14   of what was on a computer screen.
15   So, again, I'm not a hundred percent
16   sure, but I think maybe what happened is he was
17   transcribing again the z-test results and wrote
18   4 instead of 5, probably because the digit in
19   that column was a 4, and it's 5 in the report
20   because there was -- the next digit after that
21   would have been rounded up, would have been
22   caused to be rounding up to 5 rather than down
23   to 4. I think that's probably what happened,
24   but I can check to find out.
25   I know that once you're out -- you

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1   Steven P. Feinstein, PhD, CFA
2   know, once you're past 5 percent -- and here,
3   we're like, you know, ten-thousandths -- ten
4   thousandfold beyond that, it really doesn't
5   matter for statistical inference.
6   Q.   Well, Doctor, I guess what I'd say
7   is look. We have limited time this morning.
8   A.   Yeah.
9   Q.   So if you could stick to answering
10 my questions, that will avoid the need for us
11 to go to the court or to by agreement get more
12 time.
13   To the extent there's anything you
14 want to say, you know, you can -- there's an
15 opportunity for that. But if you could stick
16 to answering my questions, I'd appreciate it.
17   Now --
18   MR. MARKOVITS: Before you continue,
19 this is Bill, and I'm going to object. He
20 answered the question and provided an
21 explanation.
22   You can go ahead and ask your
23 questions, but don't instruct my witness.
24 Thank you.
25   MR. FRANK: Bill, he's got to answer

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1   Steven P. Feinstein, PhD, CFA
2   my questions. It's not much more
3   complicated than that.
4   MR. MARKOVITS: He did answer
5   your --
6   MR. FRANK: Can we agree, Bill, that
7   the stipulations that we agreed to last
8   time are going to apply to today?
9   MR. MARKOVITS: Sure.
10   MR. FRANK: Okay. That would be
11 good. Thank you.
12 BY MR. FRANK:
13   Q.   Now, with respect to the second
14 column, Dr. Feinstein, where we see "WSJ/NYT
15 News Event Days Excluding Corrective
16 Disclosure" to dates -- disclosure, and I'm
17 referring to Exhibit 112, what does -- what
18 does that column refer to?
19   A.   That's the p-value for there being
20 three of eight of the news events statistically
21 significant.
22   Q.   So that is the p-value for these
23 four different tests, excluding the
24 November 20, 2017, date. Is that correct?
25   A.   Were you asking about all four

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1   Steven P. Feinstein, PhD, CFA
2   numbers or just the 0.20 number?
3   Q.   Well, right now I was asking for all
4   four numbers.
5   A.   Right. So these are the p-values
6   for a test where we exclude the final
7   corrective disclosure from the news events,
8   even though it's identified by the New York
9   Times and Wall Street Journal as a news event,
10 and only focus on the eight other news events,
11 to see how many how many of those other eight
12 news events were statistically significant.
13   So it's the p-value for there being
14 three of eight significant news events out
15 of -- three significant news events out of
16 eight news events.
17   Q.   And when you say even though it's
18 identified by the New York Times and the Wall
19 Street Journal as a news event, what you mean
20 is that it's identified by your approach to
21 using those two newspapers to identify news
22 events. Is that correct?
23   A.   Yes.
24   Q.   Okay.
25   Now, let's just turn your attention

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1   Steven P. Feinstein, PhD, CFA
2   to the 0.20 percent number. Do you see that?
3   A.   I do.
4   Q.   And that is the p-value for a z-test
5   run just against the dates selected, excluding
6   the November 20, 2000, date. Correct?
7   A.   Yes.
8   Q.   Okay. And is this number,
9   0.20 percent, is that a typographical or
10 transcription error as well or is that the
11 correct number?
12   A.   I would want to check it. I know
13 it's statistically significant. That's what's
14 recorded in my report. But whether it's 0.20,
15 given what we've already covered earlier today,
16 I'd want to check it again. But as I sit here
17 now, I don't have any reason to believe it's
18 incorrect.
19   Q.   Well, actually, you -- you're aware
20 that the 1.17 percent number that we see next
21 to bootstrap test results on Exhibit 112, that
22 didn't appear in Exhibit 111. Right?
23   A.   That's right.
24   Q.   Okay. So that was one mistake in
25 Exhibit 111. Right?

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Steven P. Feinstein, PhD, CFA

1
2 A. A transcription error from the
3 computer screen is what I'm told.
4 Q. Okay. And -- I'm sorry. When you
5 say transcription error, is that an error that
6 the system made or is that an error that a
7 human being made in transcribing numbers from
8 what the human being was seeing on the screen?
9 A. The latter.
10 Q. Okay. So it was human error?
11 A. Of just writing down what the screen
12 was indicating --
13 Q. Okay. And --
14 A. -- into a table to present to you.
15 Q. And you believe the .0004 percent
16 number, that that also may have been a
17 transcription error, given that it's different
18 from the results reported in your report.
19 Correct?
20 A. Right. It seems to be a reasonable
21 explanation is that what was on the screen was
22 something like .00449, or 0004 with some other
23 digits afterwards, and maybe Alex truncated
24 rather than rounding up. That's probably what
25 happened.

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Steven P. Feinstein, PhD, CFA

1
2 Q. You're speculating, but you think
3 that's probably what happened?
4 A. It's not pure speculation. I mean,
5 I've been in his shoes before, transcribing
6 data off of a computer screen. And when you
7 have -- when you're so far out in the
8 significant digits here, you know,
9 ten-thousandths of a percent, and you're under
10 the gun to get an exhibit out, you know, that
11 was just -- that was just asked for and, you
12 know, it's late Friday afternoon, I can imagine
13 him truncating at 4 rather than rounding up
14 from 4 to 5, based on digits that came after
15 the 4. Seems like a reasonable explanation.
16 Q. You suspect he made a rounding
17 error?
18 A. Yes.
19 Q. Okay.
20 A. It's more of a transcription error.
21 Yeah, it would be transcription error that
22 he -- rather than just transcripting the --
23 transcribing the number he saw on the screen,
24 it's very likely he -- rather than -- rather
25 than rounding the number he saw on the screen,

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Steven P. Feinstein, PhD, CFA

1
2 he transcribed a digit he saw on the screen.
3 The better thing to do would have been to round
4 and then transcribe.
5 Q. Okay. Now, in the -- does that give
6 you cause, those two errors, to suspect that
7 maybe this 0.20 percent number isn't correct?
8 A. Well, I -- it gives me cause to want
9 to check it, but I don't have any reason to
10 believe that it's wrong.
11 I did ask my team numerous times --
12 well, there were many people who checked over
13 the code to make sure that the code was exactly
14 what we had used previously and that it was
15 correct code.
16 Alex told me that he didn't have
17 anyone check over this exhibit before he sent
18 it out. So the underlying code and the numbers
19 that are produced by the code and the numbers
20 that I relied on as diagnostics, I'm highly
21 confident are correct.
22 Q. Now, when you say that Alex told you
23 that he didn't have anyone check over this
24 exhibit before he sent it out, are you
25 referring to the first version that went out

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Steven P. Feinstein, PhD, CFA

1
2 that's been marked as Exhibit 111 or the second
3 version that went out that was marked as
4 Exhibit 112?
5 A. The first one, 111.
6 Q. Okay. Now, did people --
7 A. By 1 -- well, I'm just anticipating
8 your next question. I'll let you ask it.
9 Q. Well, you were going to say that by
10 112, you had checked 111 over and made a
11 correction that now appears in 112. Correct?
12 A. Right. So yesterday, preparing for
13 today, it was myself and Alex and Dan
14 Bettencourt and Miguel Villanueva, and we had
15 Exhibit 111, and I observed that -- the anomaly
16 in the numbers. And then Alex said, "Oh.
17 Oops. Looks like I made a transcription
18 error." And the others agreed.
19 Q. And while -- was there any attorney
20 present when you were meeting with Alex and Dan
21 and Miguel?
22 A. No.
23 Q. And during that conversation, did
24 you discuss any other errors or potential
25 errors on Exhibit 111?

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Steven P. Feinstein, PhD, CFA

1
2   A.   No. Well, potential errors.
3   I asked -- no. The answer's no.
4   Q.   Well, what did you ask, if anything,
5   regarding the accuracy of Exhibit 111?
6   A.   Well, I asked who he had check it,
7   and that's when I found out that he had no one
8   check it, that he said it was a last-minute
9   request, that they -- my understanding and the
10   understanding that was conveyed to my team is
11   that the request was for the underlying code,
12   so that you folks can duplicate/replicate the
13   diagnostics. And then my understanding is they
14   provided that code, and then subsequent to
15   providing that code, they were asked for a
16   tabulation of the results. And that was the
17   process.
18   Q.   You don't recall during your
19   deposition last week that I asked for any
20   calculations or work papers that related to any
21   diagnostic tests that you ran?
22   A.   Right. In our possession. These
23   are -- we don't print these out generally. I
24   mean, we don't print them out. I mean, this
25   was the first time they were ever printed out

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Steven P. Feinstein, PhD, CFA

1
2   and tabulated in one place.
3   It's sort of like a red light
4   indicator on the dashboard of your car. If
5   your car's not overheating, it doesn't light
6   up. You can rely on the fact that it's not
7   lighting up. Most people don't take a picture
8   of their dashboards to document and memorialize
9   that their -- that the indicator lights weren't
10   on. That's the story here. I mean, if the --
11   if there's a reason for concern, then it would
12   be printed out and reported, but if there's
13   absolutely no reason for concern, we don't
14   print them out.
15   Q.   Now, with respect to this number,
16   the 0.20 percent number, does that number
17   appear anywhere in your report that's been
18   identified -- I apologize -- marked as Exhibit
19   96?
20   A.   It's alluded to, but it's not -- the
21   number itself is not provided. What's written
22   in the report is that the test was repeated
23   excluding the final corrective disclosure, and
24   that the result, the statistical result was
25   still highly significant, that the news days

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Steven P. Feinstein, PhD, CFA

1
2   had different dynamics than the non-news days.
3   And that's in the paragraph after the one we
4   were just talking about moments ago --
5   Q.   Are you referring --
6   A.   -- in the report.
7   Q.   Are you referring to paragraph 144
8   of your report?
9   A.   Yes.
10   Q.   Okay. So in your report, in
11   paragraph 144, you allude to the test, but
12   the -- at that time you had not included in
13   your report or provided to counsel the results
14   of that z-test. Correct?
15   A.   No, the result is here. The result
16   is that -- that the prior -- the previously
17   reported results of significance is robust to
18   using three -- using eight news events instead
19   of nine.
20   Q.   That's --
21   A.   I'll just read it: "The test
22   produces the same result supporting the same
23   conclusion even if one were to remove the
24   allegation-related event."
25   So the result's here. The result is

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Steven P. Feinstein, PhD, CFA

1
2   that three of eight is a statistically
3   significant difference from the incidence rate
4   of significance in the non -- among the
5   non-news days.
6   Q.   Well, you understand that
7   statistical tests yield numerical results.
8   Correct?
9   A.   Numerical and qualitative. You
10   derive qualitative conclusions from the
11   quantitative statistics.
12   Q.   Did you include anywhere in your
13   report the numerical results that are alluded
14   to in paragraph 144?
15   A.   No. Just the conclusion.
16   Q.   So for the first time -- strike
17   that.
18   The first time you shared the
19   numerical results that are alluded to in
20   paragraph 144 is in the document marked Exhibit
21   111. Is that correct?
22   A.   The numerical z-test statistic from
23   which the conclusion in the report is based.
24   Q.   Right. That's what I'm asking
25   about.

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Steven P. Feinstein, PhD, CFA
1
2   A.   Right.
3   Q.   So the first time you provided to
4 counsel the numerical result of your FDT z-test
5 as compared to the WSJ/NYT news event days,
6 excluding the corrective disclosure date, is
7 Exhibit 111. Right?
8   A.   Well, I'll grant you the 0.20 and
9 the p-value is not in the report, but what 144
10 is is a robustness check that is reported, that
11 says three if you use three of eight instead of
12 four of nine, it's still significant. That's
13 what is reported. But the 0.20 p-value that
14 indicates that conclusion is not in my report.
15   Q.   All right. Now --
16   A.   I'm -- it was, however, presented in
17 the code that was provided to you before my
18 first deposition.
19   Q.   What was presented in the code that
20 was provided to us before your first
21 deposition?
22   A.   The code that produces the code
23 and -- that -- the z-test code and the z-test
24 results is my understanding were there.
25   Q.   So you -- you believe that you --

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Steven P. Feinstein, PhD, CFA
1
2 that this 0.20 percent number was actually
3 provided to counsel after your report but prior
4 to your first -- the first day of your
5 deposition?
6   A.   As I sit here now, I don't have any
7 reason to believe it wasn't. I think that's --
8 I believe it was.
9   Q.   Do you know for sure?
10   A.   No.
11   Q.   Now, with respect to the z-test that
12 has results listed here for both the -- all of
13 the news dates you selected and the news dates
14 excluding November 20th, were those z-tests run
15 on the basis of two separate regression models?
16   A.   Could you repeat that, please.
17   Q.   The z-tests that are referenced here
18 on Exhibit 112, those were based on two
19 different regression models. Is that correct?
20   A.   No. My understanding is it was the
21 same regression model for both sets of tests.
22   Q.   Didn't you identify a structural
23 break in the market for Freddie Mac's common
24 stock?
25   A.   Oh, I thought you were referring

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Steven P. Feinstein, PhD, CFA
1
2 to -- I thought you were referring to a
3 different regression model or a different
4 regression -- I thought you were referring to
5 there being eight news events instead of nine
6 news events, and so there being a different
7 approach to the regression for the second
8 column than for the first column. That's not
9 what you are asking.
10   Q.   Right.
11   A.   You wanted to know whether for all
12 of these, there were two separate regressions,
13 one for the -- before the structural break and
14 one for after the structural break.
15   That is the case, that there were --
16 it's the same regression model and the same
17 regression design, but they were run over two
18 separate data periods, one before the break and
19 one after the break.
20   Q.   And just for the sake of clarity,
21 are these two different z-tests or one z-test
22 that would appear in the -- that we see in the
23 two columns?
24   A.   This is two separate z-tests: one
25 that tests for three of eight significant

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Steven P. Feinstein, PhD, CFA
1
2 events and one that tests for four of nine.
3   Q.   Okay. And when you ran your z-test,
4 did you -- let's take each in turn.
5   When you ran your z-test on all of
6 the WSJ/NYT news event dates, did you apply it
7 separately to each of the two periods you
8 identified before the structural break and
9 after the structural break?
10   A.   Did I run a separate z-test for the
11 events before the structural break and a
12 separate z-test for the events after is what
13 you're asking?
14   Q.   Yes.
15   A.   No.
16   Q.   And that's the same for the second
17 column. Correct?
18   A.   That's right.
19   MR. FRANK: Let's mark the
20   Eletrobras report. And if we could
21   distribute that to counsel.
22   (Exhibit 113 is marked for
23   identification.)
24 BY MR. FRANK:
25   Q.   Dr. Feinstein, I'm showing you a

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1   Steven P. Feinstein, PhD, CFA
2   document that's been marked as Exhibit 113.
3   Do you have Exhibit 113 before you?
4   A.   I do. And I'd like a moment to
5   review it.
6   Q.   Sure.
7   MR. FRANK: While the doctor is
8   reviewing the report, I'll state for the
9   record -- well, I'll ask.
10   Bill, have you received it yet?
11   MR. MARKOVITS: No, I have not.
12   MR. FRANK: Okay. It's large. You
13   should get it soon.
14   I will state for the record that
15   previously in Dr. Feinstein's deposition,
16   we introduced Exhibit 103, which was the
17   report on market efficiency by
18   Dr. Feinstein in the Eletrobras matter.
19   Exhibit 113 is his report with all its
20   exhibits.
21   BY MR. FRANK:
22   Q.   Dr. Feinstein, I'm happy to give you
23   as much time as you need to go over the report.
24   Does it make sense for us to go off the record
25   briefly so that you can have enough time that

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1   Steven P. Feinstein, PhD, CFA
2   you need to take a look at it?
3   A.   I'm just about done.
4   Q.   Okay.
5   A.   All I need is one more minute.
6   I see. Okay. I'm ready.
7   MR. MARKOVITS: Jason?
8   MR. FRANK: Yes.
9   MR. MARKOVITS: Sorry, Doctor.
10   Jason, let me just take this
11   opportunity to reiterate what was stated in
12   emails with -- and conversations, which is
13   that the scope of this continuation is
14   limited to the three diagnostic
15   cross-checks that were performed by
16   Dr. Feinstein and nothing beyond that.
17   I gave you already a little leeway
18   with regard to the z-test results because
19   of apparent discrepancy or possible
20   discrepancy of those results in the report
21   which [audio unintelligible]. But we are
22   not going to get into anything but those
23   diagnostic cross-checks that were the
24   additions that were provided to you.
25   MR. FRANK: Bill, I'll state for the

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1   Steven P. Feinstein, PhD, CFA
2   record that we agreed to limit the scope to
3   the tests and testing set forth on the
4   document that you provided to us, and the
5   document you provided to us is labeled at
6   the top "Robustness Checks." And
7   presume -- I mean, I think that you will
8   see very quickly how we will be connecting
9   our questioning to the document and in
10   particular the robustness checks that
11   purport to be on this document.
12   So, look. You know, we've always
13   managed to work through issues
14   cooperatively, and I think this is an issue
15   where you'll find very quickly that we have
16   not strayed from our agreement.
17   MR. MARKOVITS: We'll see. I just
18   wanted to make sure we're clear on the
19   record, and if we go beyond the scope, he
20   is not going to be answering questions.
21   MR. FRANK: Well, look. If we have
22   to disagree, we'll cross that bridge when
23   we come to it. All right.
24   MR. MARKOVITS: Yeah. All right.
25   BY MR. FRANK:

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1   Steven P. Feinstein, PhD, CFA
2   Q.   Now, just to be clear, on Exhibit
3   112, you provided to us for the first time the
4   numerical result of your z-test on eight rather
5   than all nine of the dates you tested.
6   Correct?
7   A.   Yes.
8   Q.   Okay. Now, did you do that in an
9   effort to somehow establish that your FDT
10   z-test on all nine of the test dates was
11   robust?
12   A.   Do what?
13   Q.   Did you provide to us the results of
14   testing on just eight of the dates in an effort
15   to show that your testing on all nine of the
16   dates was robust or otherwise justified?
17   A.   Well, if you're asking about Exhibit
18   111 or 112, the answer is no. If you're asking
19   about the paragraph -- I believe it was 143?
20   Q.   144.
21   A.   -- 144 in my report, then the answer
22   is yes.
23   Q.   So, in other words, you discussed a
24   test based on just the eight dates, excluding
25   November 20th, in an effort to support your

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1   Steven P. Feinstein, PhD, CFA
2 test on the nine dates. Is that correct?
3   A.   Right. I was preemptively
4 anticipating what issues someone might raise
5 about the choice of events, and addressed it.
6   Q.   And the testing that you did on the
7 nine dates and the eight dates in this case
8 was --
9   A.   And which we were talking about this
10 case. Right? My answer was about --
11   Q.   Right.
12   A.   -- the current case, not Eletrobras.
13   Q.   Right.
14   A.   Okay.
15   Q.   And the testing that you did on the
16 dates in this case was based on a regression
17 model that took into account two different
18 volatility periods. Is that correct?
19   A.   That's right. And it was -- I stand
20 by it being correct.
21   Q.   And in the Eletrobras case, you also
22 identified a structural break there. Correct?
23   A.   Yes.
24   Q.   Okay. And you ran three z-tests
25 there. Correct?

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1   Steven P. Feinstein, PhD, CFA
2   A.   That's right.
3   Q.   You ran one z-test that did not take
4 into account the structural break that you
5 identified. Correct?
6   A.   That's not accurate. It's -- you --
7   MR. MARKOVITS: Let me object. You
8 are getting beyond the scope here. You
9 knew as of last deposition that he had
10 identified the structural break. You knew
11 pursuant to the paragraph in his report
12 that he had done -- that he had done both
13 three of eight and four of nine. You had
14 the opportunity to question him about that
15 at that time.
16   This continuation of the deposition
17 is intended to be solely limited to the
18 three diagnostic cross-checks that were
19 performed and that he discussed at the
20 deposition but the code for which or the
21 results for which had not been provided.
22   We provided those. You have the
23 opportunity to question him about those.
24 You do not have the opportunity to revisit
25 any issues regarding to the z-tests that

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1   Steven P. Feinstein, PhD, CFA
2 were performed because you now think there
3 are questions you should have asked last
4 week that you forgot to ask or your
5 consultants had not told you to ask.
6 That's not what this continuation is about.
7   MR. FRANK: Bill, I respectfully
8 disagree. I'm asking him about a test
9 whose results he provided to me for the
10 first time on Friday.
11 BY MR. FRANK:
12   Q.   Now, Dr. Feinstein, this WSJ/NYT
13 news event days, excluding corrective
14 disclosure, do you see that, with the
15 .20 percent?
16   A.   Yes.
17   Q.   Okay. Now, that test was based on a
18 regression model -- strike that.
19   Did that test in any way -- strike
20 that.
21   Have you in any other case run a
22 test like that where you excluded a single date
23 in order to demonstrate that your other z-test
24 results were robust or otherwise justified?
25   MR. MARKOVITS: Objection. Beyond

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1   Steven P. Feinstein, PhD, CFA
2 the scope of this deposition, and I'll
3 allow him to answer this, but that's it,
4 Jason.
5   A.   I may have. I don't know for sure.
6 I'd have to check prior reports.
7   Q.   As you sit here today, you can't
8 think of a case in which you did that?
9   A.   Well, I'll share with you my
10 thinking. If that -- that when I write a
11 paragraph such as 144, which is a preemptive
12 response to an anticipated potential challenge,
13 I'm -- it's based on my experience with what
14 kind of challenges are raised.
15   So I think the issue may have been
16 raised before. I don't recall if it was raised
17 early enough where when the issue became
18 relevant again I would have written it into a
19 report. I may have; I may not have. I just
20 don't recall for sure.
21   Q.   And if I refer to the two different
22 periods in this case that you used to run the
23 test that's reflected in the results that
24 appears on Exhibit 112 as .20 percent --
25   A.   Yes.

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Steven P. Feinstein, PhD, CFA
1
2   Q.   -- as intervals, the two -- if I
3   refer to the two different periods as
4   intervals, is that language you would
5   understand?
6   A.   Yes.
7   Q.   Okay. Sometimes when you run tests
8   based on not the entire class period, you'll
9   refer to that as an interval?
10   A.   Yes.
11   Q.   Okay. And in this case --
12   MR. MARKOVITS: Jason -- objection.
13   It's again beyond the scope.
14   Stick to the three diagnostic
15   cross-checks that are the reason for the
16   continuation of the deposition, please.
17   MR. FRANK: Bill, I've been given a
18   new result that is next to something called
19   z-test, and I'm allowed to ask the witness
20   about it. And we specifically agreed to
21   ask him about the test and testing that's
22   referenced in the document you provided to
23   me.
24   MR. MARKOVITS: No. Jason, that's
25   incorrect. What was agreed to was that the

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Steven P. Feinstein, PhD, CFA
1
2   scope of the deposition would be limited to
3   the three diagnostic cross-checks. You
4   knew that that's what the scope was going
5   to be limited to. I'm not going to permit
6   additional questions regarding the z-tests
7   you asked him about last week.
8   If you have questions about these,
9   ask them. Otherwise, we're not going to
10   answer any more questions.
11   MR. FRANK: If you can mark the next
12   document as an exhibit, I'd appreciate it.
13   Thank you.
14   Can you send that to counsel,
15   please.
16   (Exhibit 114 marked for
17   identification.)
18   BY MR. FRANK:
19   Q.   Dr. Feinstein, I'm showing you a
20   document that's been marked as Exhibit 113 --
21   114. Exhibit 114.
22   Do you have Exhibit 114 before you?
23   A.   Yes.
24   Q.   Do you see where -- that this is an
25   email from Ms. Renshaw, Emily Renshaw, to Bill

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Steven P. Feinstein, PhD, CFA
1
2   Markovits, dated August 16, 2017, at
3   11:50 a.m.?
4   A.   I do.
5   Q.   Do you see that it says, "Bill, this
6   is to confirm that we agreed to resume
7   Dr. Feinstein's deposition tomorrow at
8   9:45 a.m. for no more than two hours"?
9   Do you see that?
10   A.   Yes.
11   Q.   Do you see that it then says, "The
12   subject matter shall be limited to anything
13   relating to the tests and testing reflected in
14   the document produced to us on Friday"?
15   Do you see that?
16   A.   I see that.
17   Q.   I read that correctly?
18   A.   Yes. I mean, I -- I mean, again,
19   I -- it's something for you and the other --
20   MR. MARKOVITS: Jason, I'm going to
21   object. I am going to object and instruct
22   him not to answer anything beyond what's in
23   my email to you, which says, "Our position
24   is that the scope of the deposition is
25   limited to the three cross-checks that were

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Steven P. Feinstein, PhD, CFA
1
2   performed and for which you recently
3   received documentation. If this is not
4   agreeable, let's resolve the issue with the
5   court immediately."
6   You did not choose to take that
7   issue to the court. You can certainly do
8   so down the road. But he is not going to
9   answer any questions beyond those limited
10   to the three cross-checks that were
11   discussed last week on official
12   documentation.
13   MR. FRANK: Bill, for the record,
14   are you willing to identify the date and
15   time of the email you were just reading
16   from?
17   MR. MARKOVITS: It's part of the
18   exhibit you just -- it's down below the
19   email from Emily. It's Wednesday,
20   August 15, 10:51 a.m.
21   MR. FRANK: Ah, I see.
22   All right. And I -- okay. Very
23   good. Thank you for identifying that.
24   BY MR. FRANK:
25   Q.   And Dr. Feinstein, do you see for

14

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1   Steven P. Feinstein, PhD, CFA
2 the record in response, I -- well, Ms. Renshaw
3 replied at 11:50 a.m.?
4   Do you see that?
5   A.   I think the record speaks for
6 itself.
7   Q.   Well, do you see what I'm referring
8 to?
9   A.   No. Which --
10   Q.   Do you see that Mr. Markovits was
11 referring to an email dated 10:51 a.m.?
12   Do you see that?
13   A.   Yes. Yes.
14   Q.   And Ms. Renshaw replied at
15 11:50 a.m.
16   Do you see that?
17   A.   I see that.
18   Q.   Okay. Did you ever see this email
19 from -- any of these emails from or to
20 Mr. Markovits before today?
21   MR. MARKOVITS: I'm going to object
22   and instruct -- I'm going to object and
23   instruct him not to answer.
24   Q.   All right. Now, turning to -- let's
25 see.

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1   Steven P. Feinstein, PhD, CFA
2   Turning back to Exhibit 112 that was
3 provided to us this morning, did you ever run
4 an FDT z-test in this case that did not take
5 into account in any way the structural break in
6 the market?
7   MR. MARKOVITS: Objection. I'll let
8   him answer this, but we're not going down
9   this road, Jason. That's not related to
10   the three cross-checks that were at issue
11   from last week. This is the last question
12   about the z-test that he's going to answer.
13   A.   I don't believe so.
14   Q.   Now, are the three diagnostic tests
15 that we see on Exhibit 112 an effort to
16 establish the robustness of the z-test results
17 that appear above them?
18   A.   Not originally, that's not what they
19 were for.
20   Q.   Now --
21   A.   Well, you said -- and I want to be
22 clear about my answer. I mean, they weren't
23 run and produced in order to make an argument
24 defending the z-test. They were run and
25 produced in order to establish the legitimacy

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1   Steven P. Feinstein, PhD, CFA
2 of the z-test qualitative result, which is what
3 a diagnostic does.
4   Q.   Is it fair to say that the purpose
5 of these diagnostic tests is to account for
6 issues arising from the small sample size of
7 the z-test?
8   A.   Well, actually, I just want to be
9 real clear about my last answer.
10   These tests were run as a diagnostic
11 to identify if there was an issue. And as it
12 relates to your second question is the issue
13 that these would address are the asymptotic --
14 small sample asymptotic properties of the
15 z-test. And the diagnostic indicates that
16 there's no issue, no problem with the small
17 sample asymptotic properties of the z-test.
18   Q.   If these results are correct --
19   A.   Which ones?
20   Q.   If the results that you report on
21 Exhibit -- or -- strike that.
22   If the results that your team has
23 reported on Exhibit 112 are correct, you
24 believe those results establish that there's no
25 problem with the small sample size of the

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1   Steven P. Feinstein, PhD, CFA
2 z-tests that you ran. Is that correct?
3   A.   In this particular case, with this
4 data, with these results, yes.
5   Q.   Okay.
6   A.   That's the case.
7   Q.   Now, did you run your Fisher exact
8 test in a way that took into account the
9 structural break in the market?
10   A.   The Fisher exact test is an
11 incidence test, and the incidence -- I'm
12 sharing with you my thinking to answer the
13 question -- the incidence is the incidence of
14 significance, and significance is indicated by
15 a different regression before the break as
16 after the break.
17   So, yes, my Fisher exact test did
18 take into account the structural break.
19   Q.   It took it into account insofar as
20 it was based on the regression model that
21 informed whether price movements were
22 statistically significant. Is that correct?
23   A.   The two regression models, each for
24 a respective interval, yes.
25   Q.   Was there one regression model in

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Steven P. Feinstein, PhD, CFA

1 this case or two regression models that you
2 used?
3 A.   Depends what you mean by "model."
4 Some people use the word "model" to mean the
5 regression equation, what the right-hand side
6 variables are and what the left-hand side
7 variable is. If that's the case, there's only
8 one model.
9   But if by "model" you mean what data
10 the regression was estimated over, it was
11 estimated over two separate intervals.
12 Q.   And did the Fisher exact test run --
13 strike that.
14   Did your team run the Fisher exact
15 test for each of the two intervals that you
16 identified?
17 A.   The Fisher exact test is run over
18 the entire class period, for all of the events
19 from the entire class period, but using
20 significance indicated by each of two
21 respective regression interval estimates.
22 Q.   So the Fisher exact test was not run
23 over just the first interval of the class
24 period or the second interval of the class
25

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Steven P. Feinstein, PhD, CFA

1 period. Correct?
2 A.   That's right, nor was the z-test,
3 because of the nature of the data.
4 Q.   Do you know what the results of the
5 z-test would have been had you run them over
6 the two different intervals?
7 A.   Well, I think it's inappropriate to
8 do that. You don't need to do that. And in
9 this case, it would be inappropriate to do
10 that, since we're talking about nine events.
11 And if you'd split the nine events between the
12 two samples, you're going to get a weak -- a
13 weak test, and if -- a weak test won't indicate
14 anything because of its weakness. Can't be
15 used.
16 Q.   When you say a weak test, do you
17 mean that the sample size would have been too
18 small to yield statistically reliable results?
19 A.   Well, let's be clear about -- I
20 mean, we're talking -- there's nine events,
21 and -- can I have my report? It's here.
22   We have -- you'd only have four in
23 the second period and only five events in the
24 first period. The fewer events, the weaker the
25

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Steven P. Feinstein, PhD, CFA

1 test becomes. And, yes, I believe that running
2 it on just those four -- just four events or
3 just five events would be too small to allow
4 one to properly interpret the results. I mean,
5 the nine over the entire period is large enough
6 so that reliable inferences can be made, but if
7 we divide the period up so you only have four
8 in one period and five in the other,
9 individually those samples are not large enough
10 to make reliable inferences from the
11 statistical results.
12 Q.   In your view, what number is too
13 large -- too small? Where's the cutoff?
14   Strike that, because the record's
15 messy. I asked two questions.
16   In your view, what is the numerical
17 cutoff?
18 A.   It's indicated by the data. It's
19 indicated by these diagnostic tests. These
20 diagnostic tests will tell you whether the data
21 is -- whether there are enough events in order
22 to make reliable inferences. So these
23 diagnostic tests indicate whether you have
24 enough or do not have enough.
25

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Steven P. Feinstein, PhD, CFA

1 Q.   So if the z-test yielded a
2 statistically significant result, but the
3 Fisher exact test yielded results that were
4 statistically insignificant, what would your
5 conclusion have been?
6 A.   Well, I'd want to also look at the
7 binomial and the bootstrap test.
8 Hypothetically, I can't, as I sit here now,
9 tell you what -- the answer to your
10 hypothetical, because that's not what happened
11 here.
12 Q.   Well -- so assume the following
13 facts. Assume your z-test is as it is and that
14 all three of these diagnostic tests yielded
15 statistically insignificant results. What
16 conclusion would you have drawn?
17 A.   I would conclude that the z-test did
18 not indicate that -- reliably that the news
19 events were different from the non-news events
20 in terms of their dynamics.
21 Q.   Assume that the z-test yielded
22 statistically significant results and that two
23 of the three diagnostic tests yielded
24 statistically insignificant results. What
25

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Steven P. Feinstein, PhD, CFA

1   would your conclusion be then?
2   A.   Again, it's a hypothetical. It's a
3   bridge I'd cross when I got to it. I'd have
4   less confidence in the z-test results than I do
5   when all three tests support the z-test.
6   If two of three, I'd have to do
7   further research. I'd put more weight in the
8   bootstrap test than the Fisher and the
9   binomials. I'd have to know what the bootstrap
10   test was saying.
11   Q.   So assume in our hypothetical that
12   your z-test produced statistically significant
13   results, and that your bootstrap test yielded
14   statistically insignificant results.
15   A.   Right.
16   Q.   The other diagnostics yielded
17   statistically significant results. What would
18   your conclusion be in that circumstance?
19   A.   That -- first of all, that's like
20   the red light of your dashboard going off that
21   your engine's overheating; there's a problem
22   with your engine. That would indicate that
23   there was a problem with the z-test and that
24   its result was not reliably indicating anything

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Steven P. Feinstein, PhD, CFA

1   one way or the other. It's not proof of
2   inefficiency, but I don't think it could be
3   used to support a finding of efficiency.
4   Q.   Now, assume that the z-test results
5   were statistically significant and that of the
6   diagnostic tests, the Fisher exact test was the
7   only one where there was a significantly
8   insignificant result.
9   What would your conclusion be in
10   that circumstance?
11   A.   I don't know. I'd have to think
12   about that. There's literature on the Fisher
13   exact test, and there's some -- some people
14   believe it's too conservative.
15   So you're saying that bootstrap
16   would support the z-test results and the
17   binomial test also supports it, and only the
18   Fisher exact test does not support it. I've
19   never -- I've never faced that. In all my
20   years of doing this, I've never faced that
21   exact scenario, so I don't know. If -- it's --
22   well, that would be like you're driving your
23   car and the red light goes off intermittently.
24   You know, it goes on and off. It's cause for

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Steven P. Feinstein, PhD, CFA

1   concern, but I don't know what I would conclude
2   from it. I've never faced it, and it's
3   certainly not what happened in this case.
4   Q.   If any of these three diagnostic
5   tests yielded statistically insignificant
6   results, are there any further tests you can
7   think of that you would run?
8   A.   There's none that I've never had to
9   run, because these three tests are -- this is a
10   battery of diagnostic tests on an issue that --
11   you know, I know we're here for this purpose,
12   but it's an issue that I never anticipated you
13   folks would raise, given the strength of these
14   results, which essentially is what's implicitly
15   in the binomial test. I mean, analyst
16   quantitative methods, analysts can see these
17   results and roughly estimate the binomial
18   p-value in their head and know that these
19   results were so strong that the asymptotic
20   products of the z-test are not what's causing
21   the result. What's causing the result is that
22   the news days are -- have a different price
23   dynamic than the non-news days.
24   But nonetheless, I know there's a

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Steven P. Feinstein, PhD, CFA

1   literature on additional tests that can be run.
2   They're -- they get more obscure as you move
3   away from these three.
4   Q.   Are you able to do the binomial test
5   in your head?
6   A.   Not in my head. I can do it on
7   paper and with a calculator.
8   You want to test me?
9   Q.   Maybe.
10   The binomial test, is that a test
11   that is designed to identify whether the
12   results of your z-test are statistically
13   significant as compared to a 5 percent
14   benchmark?
15   A.   It could be a 5 -- the answer to
16   your question is no. I mean --
17   Q.   Why is that?
18   A.   Because it could be a 5 percent. It
19   could be a 5.9 percent. It could be a
20   6 percent. It could be -- I mean, what we know
21   from -- we know from this particular
22   application of the z-test and the binomial test
23   is that, by design, a non-news day has a
24   probability of statistical significance of

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1   Steven P. Feinstein, PhD, CFA
2 being -- appearing to be statistically
3 significant approximately 5 percent of the
4 time.
5   So the binomial test takes that
6 information into account to determine how
7 likely it is that you would get four of nine
8 events significant when each event has
9 approximately a 5 percent probability of
10 appearing statistically significant spuriously.
11   Q.   Well --
12   A.   Under the -- under the null
13 hypothesis that the market is not efficient
14 such that news days and non-news days behave
15 exactly the same.
16   Q.   So isn't the binomial test comparing
17 the incidence that you observe as against a
18 5 percent probability relating to randomness?
19   A.   I know what you're trying to say,
20 but you didn't quite say it right.
21   Q.   What's the right way to say it?
22   A.   What it does -- I mean, the way
23 these numbers here are for a test, that test --
24 if significance has a 5 percent probability
25 under the null hypothesis, how likely is it

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1   Steven P. Feinstein, PhD, CFA
2 that you'll get -- out of nine draws, out of
3 nine rolls of the dice, out of nine iterations,
4 four of those being statistically significant.
5   It would be essentially this: If
6 you have -- and I know there's some kids' games
7 where they have multi-sided dice. Imagine you
8 had a 20-sided die. There's 20 sides on it.
9 The numbers go from 1 to 20. You know that
10 theoretically or by construction of the die, if
11 it's a fair die, each number on that die should
12 have a 5 percent probability of appearing when
13 you roll that die.
14   So the binomial test takes that die
15 and asks the question if I roll it nine times,
16 how likely is it that I'll get four number 1s?
17 How likely is that the die will show the number
18 1 four times out of nine?
19   Frankly, everyone's got an intuitive
20 feel that that's really unlikely. The binomial
21 test goes beyond the intuitive feel and makes a
22 calculation to show that it's got a probability
23 of 0.06 percent that that could happen. In
24 other words, it's 0.06 percent that you can get
25 four of nine of news events appearing

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1   Steven P. Feinstein, PhD, CFA
2 statistically significant by random chance
3 alone. Since that's such a small probability,
4 we reject the random fluctuation alone
5 hypothesis in favor of the alternative
6 hypothesis that news days have different
7 dynamics. The stock price reacts to news.
8 That's what the binomial test does.
9   We could also run it assuming a
10 6 percent probability, but we know that, by
11 design, statistical significance at the
12 95 percent confidence level has a 5 percent
13 probability.
14   Q.   Well, let's take the more
15 traditional die, the six-sided die. You're
16 familiar with the more traditional die.
17 Correct?
18   A.   Absolutely. Sure.
19   Q.   Yeah.
20   And so you roll the die, and I guess
21 we know that -- well, you roll the die and you
22 get a number. You get the number 1.
23   A.   Okay.
24   Q.   Is there a way of conducting the
25 binomial test as against that event? How

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1   Steven P. Feinstein, PhD, CFA
2 random is it to roll the -- a six-sided die and
3 get any particular number?
4   A.   Well, that's not binomial. That's a
5 uniform distribution, so that wouldn't be a
6 binomial test. And I'm not sure what
7 hypothesis you're testing, but that's not a
8 binomial event.
9   Q.   Well --
10   A.   If you're saying 1 -- getting the
11 number 1 is a success and getting the numbers 2
12 through 6 is a failure -- they use the names
13 "success" and "failure" in the literature.
14 Sometimes they use "hits" and "no hits."
15   So let's say 1 is a hit and 2
16 through 6 is not a hit. Well, then, that
17 becomes a binomial event.
18   Q.   Well, let's take your 20-sided die,
19 then, and you roll it six times.
20   A.   Okay.
21   Q.   And twice you get the same number.
22   A.   Okay.
23   Q.   Is there a way to use the binomial
24 test to identify whether getting the same
25 number twice out of six rolls yields a

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1   Steven P. Feinstein, PhD, CFA
2   statistically significant result?
3   A.   Yes. Meaning a result that
4   wouldn't -- you can test whether that could or
5   could not, or reasonably could or reasonably
6   could not happen by random chance alone.
7   Q.   And are you able to do that off the
8   top of your head or not?
9   A.   For some simple -- for some simple
10 ones, I can do it. I would need paper and
11 calculator.
12   Q.   Okay.
13   A.   But I can do most of those.
14   Q.   So -- but two out of six, right off
15 the top of your head, you can't do that?
16   A.   I could do two out of six.
17   Q.   Off the top of your head?
18   A.   With -- I would need to write it
19 down.
20   Q.   Okay. And what about one out of
21 six?
22   A.   1 out of 6. I can tell you right
23 now 1 out of 6 has a 16 percent probability.
24 It's 1:6 probability. It's a little bit more
25 than 16 percent.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   And that --
3   A.   So getting the number 1 could happen
4   16 percent of the time, or a little bit more
5   than that.
6   Q.   And is that -- now, 16 percent of
7   the time is a lot more than 5 percent of the
8   time. Right?
9   A.   That's right. So you would not
10 reject that that could happen by random chance
11 alone. Rolling the die and getting the number
12 1 certainly can happen by random chance alone.
13   Q.   Well, 16 percent is a lot higher
14 than 5 percent, isn't it?
15   A.   That's right. That's -- if -- what
16 you need is a p-value that's lower than
17 5 percent in order to reject the null
18 hypothesis that what you observed happened by
19 random chance alone.
20   Q.   And two out of six, if one out of
21 six is 16 percent, isn't -- is it not
22 arithmetically obtainable? In other words,
23 it's not going to be 8 percent; it's not that
24 simple?
25   A.   Well, wait. We're not talking about

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1   Steven P. Feinstein, PhD, CFA
2   six die rolls, are we?
3   Q.   Yes. We're talking about six --
4   A.   I'm sorry. I thought we were
5   talking about six-sided die.
6   Q.   No, no, no.
7   A.   Hitting the number 1 --
8   Q.   We're on the 20-sided --
9   A.   Hitting the number 1 when there's a
10 6-sided die has a 16 -- a 1:6 probability.
11   Q.   Right.
12   A.   If you want to roll the dice six
13 times now -- what's the question? What's the
14 probability of getting at least 1:1?
15   Q.   Let's back up. Let's be clear, just
16 so that we have no confusion.
17   A.   All right.
18   Q.   20-sided die.
19   A.   Okay.
20   Q.   You roll it six times.
21   A.   Right.
22   Q.   You get the number 1 once.
23   A.   Right.
24   Q.   What is the -- can you take that set
25 of events -- I rolled the die six times. I got

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1   Steven P. Feinstein, PhD, CFA
2   the number 1 once.
3   A.   Right.
4   Q.   Can you take that and do a binomial
5   calculation to determine whether that was
6   statistically significant as compared to the 5
7   percent random chance probability?
8   A.   Well, just for -- you could -- you
9   could apply the test, but it's an extremely
10 weak test. You would likely find that getting
11 the number 1 can happen by random chance alone,
12 and therefore you have not proved that the
13 number 1 is more likely to come up than the
14 other numbers.
15   Q.   Why would it be an extremely weak
16 test?
17   A.   Well, there's -- there's a power
18 function associated to each test, and it's --
19 it's complicated.
20   But you -- the probability of
21 getting -- of that result under both hypotheses
22 is fairly close, and therefore it doesn't --
23 the actual observing that result doesn't
24 differentiate which hypothesis is driving the
25 die, randomness or that the die is weighted so

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1 Steven P. Feinstein, PhD, CFA
2 that the number 1 shows up more often.
3   Q.   So without even doing any actual
4 written calculations using a calculator, you
5 can tell me right now that one in six is not
6 going to reveal a statistically significant
7 result under a binomial test?
8   A.   Okay. Let's be really clear.
9   20-sided die. You're rolling it six
10 times. You get the number 1 once.
11   Q.   Right.
12   A.   Yeah. I don't think you're going to
13 get -- it's not a good test design. You're not
14 going to be able to make meaningful inferences
15 based on whatever you observe.
16   Q.   What about getting the number 1
17 twice?
18   A.   Then I've got to start doing some
19 calculations for that.
20   Q.   Okay.
21   Why don't we take a break here, and
22 we'll resume and finish up with what time we
23 have remaining.
24   A.   Okay.
25   THE VIDEOGRAPHER: The time is

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1 Steven P. Feinstein, PhD, CFA
2 11:06. We're off the record.
3   (Recess taken from 11:06 to 11:26
4 a.m.)
5   THE VIDEOGRAPHER: This is the
6 beginning of Media 2, Day No. 2, in the
7 deposition of Steven Feinstein. We're back
8 on the record. The time is 11:26.
9 BY MR. FRANK:
10   Q.   Dr. Feinstein, you testified earlier
11 before the break that you've seen some
12 literature that suggests that the Fisher exact
13 test can be too conservative.
14   Do you recall that?
15   A.   Yes.
16   Q.   What literature were you referring
17 to?
18   A.   I don't recall specifically, but
19 it's in the literature --
20   Q.   Do you remember --
21   A.   -- statistics.
22   Q.   Do you remember any particular
23 author or professor or practitioner who said
24 that?
25   A.   Well, it's just part of my general

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1 Steven P. Feinstein, PhD, CFA
2 knowledge in quantitative methods. I -- I can
3 review the literature. Not here, but, you
4 know, when I have available -- the sources
5 available to me and then provide something.
6   Q.   Well, all I've got here right now is
7 you. So I get --
8   A.   Well, you have the literature and
9 you've got two hired experts.
10   Q.   Oh, I'm talking about right now.
11 Right now. And so right now I'm just going to
12 ask you questions, and hopefully from your
13 memory you can share with me what you know.
14   Can you think, as you sit here
15 today, of any human being other than yourself
16 who has expressed the view that the Fisher
17 exact test may be too conservative?
18   A.   I can't name anyone for you, but I'm
19 certain that this is in the literature.
20   Q.   As you sit here today, can you
21 identify any particular textbook or treatise or
22 article in which the view is expressed that the
23 Fisher exact test can be too conservative?
24   A.   Working strictly from memory, no.
25   Q.   And now -- by the way, do you have

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1 Steven P. Feinstein, PhD, CFA
2 Exhibit 112 before you?
3   A.   Yes.
4   Q.   Do you see where it says "Fischer
5 Exact Test Results"?
6   A.   Yes.
7   Q.   And it's spelled F-i-s-c-h-e-r?
8   A.   Should be -- yeah, there's no C.
9   Q.   There's no C?
10   A.   Right.
11   Q.   That's a typo?
12   A.   Yes.
13   Q.   Okay.
14   Now, also, you testified earlier
15 about the binomial test, and I take it that
16 it -- your team in this case used 5 percent as
17 a benchmark. Is that correct?
18   A.   5 percent for the probability of an
19 event being -- appearing to be to be
20 statistically significant by random chance
21 alone, yes. That's called the size of the
22 t-test underlying the significance test.
23   Q.   Now, was using that 5 percent number
24 dictated by the statistical literature or did
25 your team have a choice as to what number it

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1   Steven P. Feinstein, PhD, CFA
2 could use as a benchmark?
3   A.   Well, it's dictated by me. When I
4 designed these -- the use of these diagnostics,
5 it's because that's the -- I mean, it's not as
6 clear-cut. I mean, it's both. It's, you know,
7 dictated by me based on what's in the
8 literature. The size of the significance test
9 is 5 percent. Therefore, 5 percent is the
10 probability of a random event, randomly
11 appearing statistically significant.
12   Q.   Now, based on the regression model
13 or models that you used in this case, didn't
14 you identify 23 statistically significant dates
15 out of the total 330 dates?
16   A.   That's right.
17   Q.   Could you have used that fraction as
18 expressed in a percentage as the benchmark in
19 your binomial test?
20   A.   I'm not sure it makes sense to use
21 the 23 out of 330. It could make sense to use
22 the -- what would be then -- the 14 out of 321.
23 It could make sense. But still I think the
24 5 percent is the better choice, because it's
25 analytic rather than estimated.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   How do you get to 14 out of 321? By
3 taking out -- by dummying out the nine days you
4 observed?
5   A.   No, not dummying them out.
6   Q.   Taking them out?
7   A.   Look -- taking them out using the
8 observed percentage or proportion of non-news
9 days that appeared to be statistically
10 significant. I mean, that's essentially what
11 the z-test does is it estimates from the data
12 what the two samples' incidence rate of
13 significance is, whereas the binomial test uses
14 the analytics from the underlying t-test.
15   Q.   Now --
16   A.   So the -- that's why they're
17 different tests.
18   Q.   Now, do you recall earlier
19 testifying about the power of a test that
20 examined only six events?
21   A.   I do recall that.
22   Q.   Is there anything that statisticians
23 or economists do to calculate the power of a
24 test?
25   A.   There are power tests.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   Did you apply any of those power
3 tests in this case to your analyses?
4   A.   It wasn't necessary. The power test
5 tells you what is the probability of an
6 indication of nonsignificance when, in fact,
7 the true phenomenon is significance.
8   So because the tests here indicated
9 significance, all of them, there was no need to
10 test the power of the test. It was clearly
11 powerful enough.
12   Q.   Well, let's put aside the issue of
13 whether it was necessary to test the power.
14 Okay? Can we put that aside for a moment?
15   A.   Sure.
16   Q.   Okay. Did you test the power of
17 your tests here?
18   A.   In a sense, yes, by observing that
19 they all indicated statistical significance,
20 which proves they were all powerful enough.
21   Q.   What tests did you run to test the
22 power of your tests here?
23   A.   I just explained it by I observed
24 that they all indicated statistical
25 significance, which means that it was not the

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1   Steven P. Feinstein, PhD, CFA
2 case that it was -- that the test was too weak
3 to identify statistical significance.
4   Q.   Are there statistical tests that you
5 can run to identify the power of a test?
6   A.   There are, but observing that the
7 outcome of a false indication of
8 nonsignificance did not happen indicates enough
9 that the power of the test is sufficient.
10   Q.   What are the names of these tests
11 that you can run to identify the power of a
12 test?
13   A.   I've got to -- they're power
14 function tests as the general class of tests.
15 I can't name them for you.
16   Q.   Did you run any power function tests
17 in this case?
18   A.   Well, I'm going to stick to my
19 earlier answer. Observing statistical
20 significance from all of these tests is --
21 provides all one needs to know about power.
22 The tests were powerful enough.
23   Q.   So your answer is you didn't need to
24 run any power function tests. Right?
25   A.   No. No. My answer is that the

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1   Steven P. Feinstein, PhD, CFA
2   statistical significance of these test results
3   is a sufficient power test for this
4   application.
5   Q.   So --
6   A.   It is a power test. It was run.
7   And you have the results. You've always had
8   them.
9   Q.   Well, what is the power test that
10 was run?
11   A.   That these tests --
12   MR. MARKOVITS: Objection. It's
13   been asked and answered.
14   Go ahead.
15   A.   That the z-test indicates
16 statistical significance tells you that there
17 was not an issue with low power.
18   Q.   And in addition to that, did you run
19 any other power function tests?
20   A.   No.
21   Q.   And are there any calculations that
22 you haven't provided to us to date that
23 evidenced the power of the tests that you did
24 run?
25   A.   No.

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1   Steven P. Feinstein, PhD, CFA
2   Q.   Okay. Now, Dr. Feinstein, on the
3   first day of your deposition, as you know, a
4   transcript was created, and I'm reading from it
5   on page 45.
6   I asked you at line 5, "Well, is the
7   Fisher exact test a statistical test?"
8   You answered: "Yes."
9   I asked: "And does it yield
10 numbers?"
11   You answered: "Yes."
12   I asked: "And those numbers, what
13 were those numbers?"
14   You answered: "I don't recall. I
15 know that they were just not over the threshold
16 to indicate any issue with sample size."
17   I asked: "Do you have a record of
18 the test, the Fisher's exact test that you
19 ran?"
20   You answered: "Yes."
21   Now that several days have passed,
22 did you come to find that your firm didn't have
23 a record of the Fisher exact test?
24   A.   No, that answer was correct. We
25 provided the code. You said do I have a record

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1   Steven P. Feinstein, PhD, CFA
2   of the test that was run. That's the code that
3   was provided.
4   Q.   Did the code -- when you say "the
5   code," are you referring to code that enabled
6   other economists to run the test?
7   A.   Yes.
8   Q.   Okay. So this is -- you didn't have
9   a record of the results of the test; you had a
10 record of the code that would enable someone
11 else to run the test. Is that right?
12   A.   And that was your question: Do I
13 have a record of the test that was run?
14   Yes.
15   MR. FRANK: Okay. At this time I
16   have no further questions.
17   And unless you have questions,
18   Bill -- well, I'll ask you: Do you have
19   any questions?
20   MR. MARKOVITS: No, I have no
21   questions.
22   MR. FRANK: Okay. Well, then, we
23   can conclude this deposition.
24   Thank you all for your time.
25   THE VIDEOGRAPHER: This is the end

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1   Steven P. Feinstein, PhD, CFA
2   of Media No. 2, Day 2 in the deposition.
3   The time is 11:37. We're off the record.
4   THE REPORTER: Counsel, before you
5   all hang up, can you tell me if you need to
6   order a transcript?
7   MR. MARKOVITS: This is Bill
8   Markovits. We'd like our regular delivery
9   transcript, sure.
10   THE REPORTER: Okay. Anybody else?
11   MR. GOLDFARB: This is James
12   Goldfarb with Murphy & McGonigle for Mr.
13   Piszel. Same order as last week's
14   transcript.
15   Thank you.
16   MR. FOTIADES: This is Adam Fotiades
17   from Zuckerman Spaeder for Patty Cook.
18   Just like James, same order as last week.
19   THE REPORTER: Okay. Great.
20   (Witness excused and deposition
21   concluded at 11:38 a.m.)
22
23
24
25

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1 ERRATA SHEET FOR THE TRANSCRIPT OF:
2 Case Name: Ohio Public Employees Retirement System
   v. Federal Home Loan Mortgage Corp.
3 Dep. Date: August 17, 2017
   Deponent: Steven P. Feinstein, PhD, CFA
4
      CORRECTIONS:
5
   Pg. Ln. Now Reads   Should Read   Reason
6 ___ ___ _____ _____ _____
7 ___ ___ _____ _____ _____
8 ___ ___ _____ _____ _____
9 ___ ___ _____ _____ _____
10 ___ ___ _____ _____ _____
11 ___ ___ _____ _____ _____
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15 ___ ___ _____ _____ _____
16 ___ ___ _____ _____ _____
17 ___ ___ _____ _____ _____
18
19   _____
            Signature of Deponent
20 SUBSCRIBED AND SWORN BEFORE ME
21 THIS____DAY OF_____, 2017.
22
23 _____
24 (Notary Public) MY COMMISSION EXPIRES:_____

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1   C E R T I F I C A T E
2
3   I, Deanna J. Dean, a Registered Diplomate
4 Reporter, Certified Realtime Reporter, and
5 Massachusetts Notary Public, do hereby certify that
6 the foregoing, to the best of my knowledge, skill
7 and ability, is a true and accurate transcript of
8 my computer-aided electronic stenographic notes of
9 the deposition of STEVEN P. FEINSTEIN, PHD, CFA,
10 who was duly sworn, taken at the place and under
11 the circumstances present on the date hereinbefore
12 set forth.
13   I further certify that I am neither attorney
14 or counsel for, nor related to or employed by any
15 of the parties to the action in which this
16 deposition was taken, and further that I am not a
17 relative or employee of any attorney or counsel
18 employed in this case, nor am I financially
19 interested in this action.
20
21
   _____
22   Deanna J. Dean, RDR, CRR
      Signed this 18th day of August, 2017
23   My MA commission expires December 28, 2018
24

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1   I N D E X
2
3 Examination   Page
4 STEVEN P. FEINSTEIN, PHD
5   By Mr. Frank   406
6
7
8   E X H I B I T S
9
10 Number   Description   Page
11 Exhibit 110 8/11/17 Email from Markovits to 406
12   Frank and Renshaw
13 Exhibit 111 Freddie Mac Collective Test   409
14   Robustness Checks
15 Exhibit 112 8/17/17 Email from Markovits to 415
16   Frank and Renshaw with Attached
17   Document Titled "Freddie Mac
18   Collective Test Robustness
19   Checks"
20 Exhibit 113 6/30/17 Report on Market   438
21   Efficiency by Steven P. Feinstein,
22   PhD, CFA (Eletrobras Case)
23 Exhibit 114 8/16/17 Email from Renshaw to 448
24   Markovits